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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,621

06/10/2005

Laurence Germond-Rouet

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

WEATHERBY, ELLSWORTH

ART UNIT

PAPER NUMBER

3768

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/538,621

Applicant(s)

GERMOND-ROUET ET AL.

Examiner

Ellsworth Weatherby

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/10/2005; 3/20/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 13-14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-13 of U.S. Patent No. 5,938,606. Although the conflicting claims are not identical, they are not patentably distinct from each other because both teach an ultrasonic image processing system for processing images representing a segment of an artery explored along its longitudinal axis where there is semi-automatic detection means for detecting the artery walls in the

images and an automatic rigid tracking means for tracking the artery walls; evaluation means for evaluating artery wall motion and distensibility; and viewing means.

Claim Objections

3. Claim 2 is objected to because of the following informalities: Applicant claims, "selecting a reference image as starting image". It is suggested that the claim be rewritten to read, "selecting a reference image as a starting image". Appropriate correction is required.
4. Claim 3 is objected to because of the following informalities: Applicant claims, "drawing a portion of path". It is suggested that the claim be rewritten to read, "drawing a portion of the path". Appropriate correction is required.
5. Claim 6 is objected to because of the following informalities: Applicant claims a "two-dimensional plus time volume". This is not clear. Therefore, for the purposes of examination the Examiner is interpreting this claim to read, two-dimensional images corresponding to a volume over a period of time. Appropriate correction is required.
6. Claim 14 objected to because of the following informalities: Applicant claims, "having means to acquired". It is suggested that this be rewritten to, "having means to acquire". Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 7, 11, and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonnefous (USPN 5,938,606).

Bonnefous '606 teaches and ultrasonic image processing system, for processing images in an image sequence representing a segment of artery explored along its longitudinal axis, said artery segment showing moving walls (col. 3, ll. 66-67; col. 4, ll. 1-15); this system comprising: semi-automatic detection means for detecting the artery walls in an image of the sequence (col. 4, ll. 25-31); automatic rigid tracking means for tracking the corresponding artery walls in other images of the sequence (col. 4, ll. 36-67; col. 5, lines 1-5); evaluation means for evaluating the artery wall motion (col. 5, lines 6-8) and also a viewing means for visualizing images where a physician can determine distension (col. 9, lines 29-41). Bonnefous '606 also teaches computation means for calculating the dilation of the artery along the ultrasound beams in the images of the sequence using the segmentation of the walls performed by path finding within semi-automatic detection and rigid tracking (col. 1, ll. 52-60; col. 8, ll. 27-50).

Claims 11 and 13-14 do not contain any feature which, in combination with the features of any claim they refer meet the requirements of novelty and/or inventive over Bonnefous '606. Therefore, the same reasoning from claims 1 and 7 applies *mutatis mutandis* to the subject matter of the corresponding claims 11 and 13-14.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefous '606 in view of Hall et al. (USPN 6,508,768).

Bonnefous '606 teaches all the limitations of the claimed invention including selecting a reference image as a starting image among the images of the sequence (col. 4, lines 51-55) and drawing lines, called paths, representing the artery walls in the starting image (col. 4, lines 25-55). Bonnefous '606 also teaches selecting a starting pixel in a reference image for creating new path structures and integrating the displacements over the longitudinal arterial axis (col. 8, ll. 11-36); drawing a portion of the path between the starting pixel and second selected pixel in the starting image (col. 8, ll. 51-57; col. 9, ll. 1-41); storing the path in memory (col. 5, ll. 9-16); drawing portions of the path along the length of the vessel where the paths are selected using linear regression and storing the optimal paths to memory (col. 9, ll. 12-41). Bonnefous '606

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also teaches estimating the value of the pixels based on their gradient at the pixel in the ultrasonic image (col. 9, ll. 12-22). Bonnefous '606 also teaches that the automatic rigid tracking means for tracking the corresponding artery walls in other images of the sequence comprises means for path finding including means for: defining regions of interest around the paths drawn in the starting image and using the same regions of interest in other images of the sequence (col. 5, ll. 64-67; col. 6, ll. 1-5); selecting a current image next to the starting image (col. 5, ll. 18-27); initializing the tracking of the paths in the current image to fit the walls in the current image (col. 5, ll. 10-17); and iterating these path finding steps until the beginning and end of the sequence are reached (col. 6, ll. 39-45). Bonnefous '606 also teaches that the tracking function performs evaluation of individual points based on the gradient at the point in the ultrasonic images calculated for all the images of the sequence, considered as a two-dimensional image over a period of time (abstract).

Bonnefous '606 does not expressly teach drawing lines, called paths, *assisted by a path search technique based on the minimization of a cost function.*

Hall et al. '768 teaches as state of the art drawing lines which are linked to elasticity modulus which are assisted by a path search technique based on the minimization of a cost function (col. 16, lines 28-35).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bonnefous '606 with Hall et al. '768 because Bonnefous '606 teaches drawing the paths using known regression methods (Bonnefous '606: col. 9, ll.

20-23). The motivation to modify Bonnefous '606 with Hall et al. '768 would have been to accurately and repeatably draw the artery walls using a well know algorithm.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefous '606 in view of Bonnefous (USPN 5,579,771).

Bonnefous '606 teaches all the limitations of the claimed invention including evaluating the distensibility of a vessel (col. 9, ll. 29-40). Bonnefous '606 does not expressly teach evaluating distensibility as *the ratio of the dilation by the diameter of the artery*.

Bonnefous '771 teaches evaluating the distensibility as the ratio of the dilation by the diameter of the artery (col. 5, ll. 51-67; col. 6, ll. 1-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bonnefous '606 with Bonnefous '771. The motivation to modify Bonnefous '606 with Bonnefous '771 would have been to qualitatively evaluate distensibility.

12. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefous '771 in view Bonnefous (PGPub. No. 2001/0031921).

Bonnefous '771 teaches all the limitations of the claimed invention except for expressly teaching that the system includes a color display means to display colored paths for the artery walls and colored patterns for the wall dilation superimposed on the ultrasonic images. Bonnefous '771 also does not expressly teach a suitably

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programmed computer of a workstation or a special purpose processor having circuit means, which are arranged to process ultrasonic images, having means to display the processed images, and having a user interface such as a mouse or a keyboard to permit the user of interacting on the respective images of the sequence in order to display the quantified parameters related to the artery walls.

In the same field of endeavor, Bonnefous '921 teaches that the system includes a color display means to display colored paths for the artery walls and colored patterns for the wall dilation superimposed on the ultrasonic images (abstract). Bonnefous '921 also teaches a suitably programmed computer of a workstation or a special purpose processor having circuit means, which are arranged to process ultrasonic images, having means to display the processed images, and having a user interface such as a mouse or a keyboard to permit the user of interacting on the respective images of the sequence in order to display the quantified parameters related to the artery walls (claim 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bonnefous '771 with Bonnefous '921. The motivation to modify Bonnefous '771 with Bonnefous '921 would have been to highlight the displacements such that they are readily and easily exploitable for a cardiologist to utilize.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefous '771 in view of Hall et al. '768.

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Bonnefous '771 teaches all the limitations of the claimed invention except for expressly teaching that the transducer array is a curved transducer array.

In the same field of endeavor, Hall et al. '768 teaches that it would have been obvious to one of ordinary skill in the art to use a curved linear array (col. 13, ll. 20-34). The motivation to modify Bonnefous '771 in view of Hall et al. '768 would have been to use an array that produces more focused ultrasonic beams thereby improving the accuracy or precision of the system.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellsworth Weatherby whose telephone number is (571) 272-2248. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on (571) 272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EW


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